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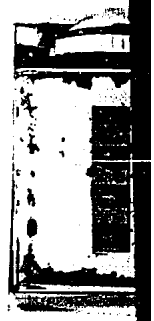

DEVELOPMENT AND FUTURE OF HUNGARIAN CHEMICAL INDUSTRY

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The rapid expansion of the Hungarian chemical industry began during the Three-Year Plan. At that time, war damages to major plants such as the Pet Nitrogen Works (Peti Nitrogenmuvek) and the Budapest Sulfuric Acid Factory (Budapesti Kensavgyar) were repaired. The extent of war damages is reflected in 1946 and 1947 output, which together amounted to only 81.5 percent of 1938 output.

By the end of the Three-Year Plan, repairs were completed and the output of the chemical industry was 76 percent greater than in 1938. Expansion as well as repairs took place during this period: the Danube Valley Alumina Factory (Dunavolgyi Timfoldgyar) was completed, and the entire aluminum industry was modernized to such an extent that, by 1949, the output of aluminum and alumina greatly exceeded that of prewar times.

The development of the petroleum industry began under state ownership also. During the Three-Year Plan, petroleum output was increased by a tremendous stepping up of drilling and by improved production technology. Geophysical techniques and equipment were modernized with the result that several new oil wells were discovered. These wells began producing during the First Five-Year Plan. Although the capacity for processing petroleum did not increase during the Three-Year Plan, processing facilities were utilized more efficiently so that more fuel was available to transportation and agriculture.

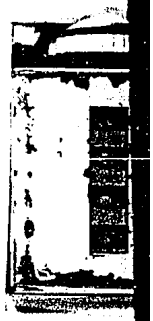
The organic chemical and pharmaceutical industries began producing many new things. The domestic production of acetic acid and acetaldehyde from alcohol laid the foundation for the domestic production of organic starting materials. The manufacture of textile dyes represented an entirely new branch of industry. The production of important drugs, formerly imported, began also. These included pyramidon, thrombin, aminosalicylic acid, etc.

Despite expansions and repairs during the Three-Year Plan, the chemical industry was still unable to manufacture enough primary materials to meet the demands of the expanding economy. At the beginning of the Five-Year Plan, there was still a shortage of sulfuric acid, chemical fertilizer, caustic soda, oxygen, sulfur, tar products, organic primary materials, lubricating oils, plastics, antibiotics, etc.

It was one of the major tasks of the Three-Year Plan to establish a chemical industry which would be able to fulfill the needs of an expanding economy, and it was indeed successful as a basis for the Five-Year Plan.

The development of the chemical industry during the Five-Year Plan can be best discussed if technical and production development are treated separately.

The development of production is best illustrated by figures. According to these, the volume of production in 1954 was 300 percent by 1949 production. Consequently, the production of the chemical industry represented 7.9 percent of the total production of the manufacturing industry at the end of the Five-Year Plan. In 1954, the output of the inorganic chemical industry was 250 percent, the pharmaceutical industry 400 percent, and the rubber industry 300 percent of 1949 production. During this period, the output of alumina was 450 percent, the processing of petroleum 300 percent, and the value of the fixed capital of the chemical industry 160 percent of 1949. However, the figures alone do not indicate the direction and type of development.



On the whole, the development of the chemical industry has been satisfactory and has established a potential for much greater growth during the Second Five-Year Plan.

Technical development in the chemical industry has been largely satisfactory too. The new plants are all modern and efficient and their products are of good quality.

The Hajdusag Pharmaceutical Factory needs half the number of personnel to produce the same amount of penicillin as the Chinoin Factory. At the vulcanizing shop of the Rubber Goods Factory, vulcanizing time and temperature are automatically set and controlled.

Production techniques have been modernized in nearly every field. Results have been particularly good in the petroleum industry with the expansion of mechanical production and the recent repair of the oil wells. The new system of conducting natural gas and oil to Budapest in the same pipe has greatly improved the gas supply of the capital.

Techniques in aluminum metallurgy have improved also. The average capacity of most of the furnaces has increased 140 percent. Hall-type furnaces are extensively used. The alumina industry has been expanded and modernized; the Bayer system has been perfected and improved through the installation of up-to-date equipment.

Production techniques have been revised in the organic and inorganic chemical industry also. Today, acetic acid is synthetized, and the phtalic acid anhdride shop has been enlarged by a new reactor. The sulfuric acid plants use a modern contact process to roast pyrites. Modern rectifiers were installed at the Hungaria Chemical Works to increase the production of caustic soda. Concentrated nitric acid is produced by modern methods.

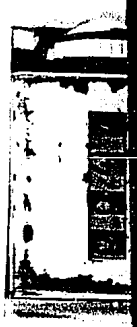
Despite the foregoing results there are a good many deficiencies in the modernization of techniques, particularly at the older plants. These plants are backward in their manufacturing processes rather than in the chemical processes involved.

Although the research institutes have done fine work in modernizing chemical processes, many of the processes have not yet been adopted by the plants. This slowness has been especially typical in the fields of organic and inorganic chemistry and the coal processing industry.

A lack of proper structural material has retarded the widespread adoption of modern techniques. Another symptom of technological backwardness is the fact that batch production is still used in fields where continuous production could well be introduced. During the Five-Year Plan, the production of many new products began. These included sulfa drugs such as sulfamethazine and sulfaguanidine; new antibiotics, including penicillin and streptomycin; and new vitamins including synthetic vitamin C and vitamins B_1 and B_{12}.

The manufacture of pure aluminum has enlarged the sphere of structural material available to the chemical industry as well as to other industries.

Despite technological advances, Hungary still makes most enamel paints with an oil and resin base instead of a synthetic resin base. The aluminum industry has been unable to produce high-strength aluminum alloys. There are still too few readily available varieties of chemical fertilizer and insecticide. The plastics industry is very retarded, although it is becoming increasingly important to the economy.



There has been too great a delay in putting modern products into large-scale production. Except for Izonicid, not a single chemical product has been manufactured on a scale that would permit export within 2 months of the start of production.

There have been deficiencies in the quality of certain items too. All of the products of the oil processing industry are of good quality except motor fuels. Although the quality of tires has improved, there is room for even greater improvement. The quality of Forte photo paper and film is improving. Superphosphate is better now that the grains are of the proper size. Unfortunately the quality of motor fuels is substandard. Hungarian gasoline has a low octane count, and very little tetraethyl is added to it.

There have been several complaints in connection with drugs, not in regard to their effectiveness but in regard to the packaging and wrapping.

To raise the technical standards of the chemical industry, the entire industry should be more fully mechanized, and greater use should be made of automatiztion and instruments.

One of the fields most neglected by the chemical industry has been the processing and utilization of by-products or wastes.

It is true that caustic soda is now recovered from red mud, that a use has been found for mycelium left from penicillin production, that vitamin B12 is made from waste material, and that sodium thiosulfate is recovered from the mother liquor of sulfur black; but this is merely a beginning. Red mud could be still further processed for alumina, titanium dioxide, and iron ore; iron oxide, copper, and other precious metals could be recovered from pyrite roasts; cracking gas is still burnt instead of being processed; etc.

At the same time, there is no cause for satisfaction with the reduction of production costs in the chemical industry. During the Five-Year Plan, the level of production costs of comparable products was reduced only by 5.5 percent, which is not only far below the possibilities in the chemical industry but far below the national level. Chemical engineers and personnel sh uld pay greater attention to this problem because their carelessness and indifference is costly.

In preparing the Second Five-Year Plan, special attention should be paid to increasing the production of starting materials for the chemical industry. This means not only increased production of sulfuric acid, caustic soda, and chemical fertilizer, but also the establishment of an organic starting material industry.

During the Second Five-Year plan, the coal processing and metallurgical industries must be developed in such a way that they can contribute more starting materials to the chemical industry. The accomplishment of this is important to the metallurgical and power industries as well as to the chemical industry. The neglected field of plastics must be turned into a flourishing industry during the Second Five-Year plan. The chemical industry must establish and broaden the production of polyvinylchloride leather and of all types of synthetic fiber.

In the coming plan period, the chemical industry must increase productivity and reduce production costs. To achieve this, the chemical industry requires further mechanization and automatiztion, which makes the reconstruction of the chemical plants a primary issue. The widespread use of by-products and waste materials for chemical starting materials will also help in the reduction of costs.

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The Second Five-Year Plan should place special emphasis on making the chemical industry serve the needs of the entire economy rather than limiting itself to its own development. For example, the manufacture and extensive use of textile bakelite cogwheels or acid-resistant plastic linings would increase the productivity of the machine industry. The use of even a small percentage of synthetic fiber such as orlon and Perlon would greatly improve the quality of Hungarian textiles, while the widespread use of these fibers would revolutionize the textile industry. Making items such as these available to the entire economy should be the future task of every chemical engineer.

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